

I Claim:

1. In a reactor for treating strands or strips of material having a surface, the reactor including:

an outer jacket extending parallel to a transportation direction of the strands or strips of the material;

two opposing walls, at least one of the walls having an opening for passing the strands or strips of material therethrough;

devices for transporting the strands or strips of material through the reactor;

devices for transporting the strands or strips of material relative to the reactor;

devices for transporting gases relative to a reactor space; and

a gas feedline and distribution device disposed at the opening and having gas discharge openings, the gas feedline and distribution device being configured to outflow a gas stream at the gas discharge openings to generate a gas curtain for preventing undesirable

substances from crossing the gas curtain relative to the reactor space;

a gas seal, comprising:

a deflector or gas guide body of the gas feedline and distribution device:

extending toward an interior of the reactor;

disposed behind the gas discharge openings of the gas feedline and distribution device relative to the interior of the reactor; and

disposed at a distance from the respective surfaces of the strands or strips of material.

2. The gas seal according to claim 1, wherein the opposing two walls are a front wall and a rear wall.

3. The gas seal according to claim 1, wherein the opposing two walls are an upper and a lower seal wall.

4. The gas seal according to claim 1, wherein the opening in the at least one of the walls is for introducing the strands or strips of material.

5. The gas seal according to claim 1, wherein the opening in the at least one of the walls is for removing the strands (7) or strips of material.
6. The gas seal according to claim 1, wherein the devices for transporting the strands or strips of material transport the strands or strips of material to the reactor.
7. The gas seal according to claim 1, wherein the devices for transporting the strands or strips of material transport the strands or strips of material from the reactor.
8. The gas seal according to claim 1, wherein the reactor includes devices for heating at least one of the interior of the reactor, parts of the interior of the reactor, the strands or strips of material, and parts of the strands or strips of material.
9. The gas seal according to claim 1, wherein the reactor includes devices for cooling at least one of the interior of the reactor, parts of the interior of the reactor, the strands or strips of material, and parts of the strands or strips of material.
10. The gas seal according to claim 1, wherein the reactor includes no devices for heating and no devices for cooling the

interior of the reactor, parts of the interior of the reactor, the strands or strips of material, and parts of the strands or strips of material.

11. The gas seal according to claim 1, wherein the devices for transporting gases relative to the reactor space are devices for supplying the gases to the reactor space.

12. The gas seal according to claim 1, wherein the devices for transporting gases relative to the reactor space are devices for removing the gases from the reactor space.

13. The gas seal according to claim 1, wherein the gases being transported are temperature-regulated.

14. The gas seal according to claim 1, wherein the gases being transported are non-temperature-regulated.

15. The gas seal according to claim 1, wherein the gas curtain generated by said gas feedline and distribution device prevents the undesirable substances from entering the reactor space.

16. The gas seal according to claim 1, wherein the gas curtain generated by said gas feedline and distribution device

prevents the undesirable substances from exiting the reactor space.

17. The gas seal according to claim 1, wherein said deflector or gas guide body has at least one surface adjacent the strands or strips of material and lying at a geometrical level equaling the gas discharge openings of the gas feedline and distribution device.

18. The gas seal according to claim 1, wherein said deflector or gas guide body has at least one surface adjacent the strands or strips of mater and laying at a level different from a geometrical level of the gas outlet opening.

19. The gas seal according to claim 1, wherein:

the reactor is a horizontally operating reactor; and

said deflector or gas guide body is a constituent part of the horizontally operating reactor.

20. The gas seal according to claim 1, wherein:

the reactor is a vertically operating reactor; and

said deflector or gas guide body is a constituent part of the vertically operating reactor.

21. The gas seal according to claim 1, further comprising devices for circulating gaseous contents of the interior of the reactor.

22. The gas seal according to claim 1, wherein the reactor is a furnace.

23. The gas seal according to claim 1, wherein:

said deflector or gas guide body has a surface area; and

said deflector or gas guide body is disposed parallel to the gas feedline and distribution device to maintain constant interspacing with the strands or strips of material throughout said surface area.

24. The gas seal according to claim 1, wherein said deflector or gas guide body is made from a material selected from the group consisting of a metal, a metal alloy, a ceramic, glass, a composite material, and a plastic.

25. The gas seal according to claim 1, wherein said deflector or gas guide body is formed from a textile composite selected from the group consisting of fibers, threads, yarns, and wires.

26. The gas seal according to claim 25, wherein said deflector or gas guide body includes a fabric made from at least one of fibers, threads, and wires; the fabric further being made from a material selected from the group consisting of steel, stainless steel, copper, brass, bronze, silicon dioxide, silicon carbide, aluminum oxide, glass, and mineral fibers.

27. The gas seal according to claim 1, wherein:

the strands or strips of material have a flat side; and

said deflector or gas guide body is disposed proximate the flat side of the strands or strips of material.

28. The gas seal according to claim 1, wherein:

the strands or strips of material have a flat side; and

said deflector or gas guide body is only disposed on the flat side of the strands or strips of material.

29. The gas seal according to claim 27, wherein:

the strands or strips of material have a further flat side;  
and

a further deflector or gas guide body is disposed only on one of the flat sides of the strands or strips of material.

30. The gas seal according to claim 28, wherein:

the strands or strips of material have a further flat side;  
and

at least one further deflector or gas guide body is disposed on the further flat side of the strand or strip of material.

31. The gas seal according to claim 1, wherein said deflector or gas guide body has a flat surface and ends and edges facing the interior of the furnace, the ends and edges being rounded and free from burrs.

32. The gas seal according to one or more of claim 1, wherein said deflector or gas guide body has a bowed surface and ends and edges facing the interior of the furnace, said ends and edges being rounded and free from burrs.

33. The gas seal according to claim 1, wherein said deflector or gas guide body has a smooth surface.

34. The gas seal according to claim 1, wherein said deflector or gas guide body has an anti-adhesion coating.



35. The gas seal according to claim 1, wherein said deflector or gas guide body is protected against corrosion.

36. The gas seal according to claim 1, wherein said deflector or gas guide body is formed as a heating body.

37. The gas seal according to claim 1, wherein said deflector or gas guide body is formed as a cooling body.

38. The gas seal according to claim 1, wherein the distance of said deflector or gas guide body from the surface of a directly adjacent one of the strands or strips of material is at least 5 mm.

39. The gas seal according to claim 1, wherein the distance of said deflector or gas guide body from the surface of a directly adjacent one of the strands or strips of material is between 15 and 40 mm.

40. The gas seal according to claim 1, further comprising a further deflector or gas guide body disposed on an opposite side of a directly adjacent one of the strands or strips of material;

the distance of said deflector or gas guide body from the surface of the immediately adjacent one of the strands or

strips of material differing from a distance of the further deflector or gas guide body from the opposite side of the strand or strip of material.

41. The gas seal according to claim 1, wherein:

said deflector or gas guide body has a length; and

a ratio of said length of said deflector or gas guide body to said distance from the surface of the directly adjacent strand or strip of material to said deflector or gas guide body is at most 10:1.

42. The gas seal according to claim 41, wherein said ratio of said length of said deflector or gas guide body to said distance from the surface of the directly adjacent strand or strip of material to said deflector or gas guide body is between 4:1 and 6:1.

43. The gas seal according to claim 1, further comprising a further deflector or gas guide body disposed directly adjacent said deflector or gas guide body and on a side of said deflector or gas guide body from a given one of the strips or strands of material immediately adjacent said deflector or gas guide body;

said deflector or gas guide body being installed and shaped so a desired first distance to the immediately adjacent one of the strips or strands of material and a second distance to said further deflector or gas guide body is largely maintained when the strand or strip of material sags.

44. The gas seal according to claim 1, wherein gas leaves said gas distribution device from directed nozzles.

45. The gas seal according to claim 44, wherein said nozzles are configured to direct the gas stream leaving said nozzles at an angle relative to the interior of the reactor and form with the surface of the directly adjacent one of the strands or strips of material an angle ranging from 30° to 60°.

46. The gas seal according to claim 44, wherein said nozzles are bent gas outlet openings and form with a surface of said deflector or gas guide body an angle ranging from 30° to 60°.

47. The gas seal according to claim 43, wherein said nozzles are configured to direct the gas stream leaving said nozzles at an angle relative to the interior of the reactor and form with the surface of a directly adjacent one of the strands or strips of material an angle ranging from 40° to 50°.

48. The gas seal according to claim 44, wherein said nozzles are bent gas outlet openings and configured to direct the gas stream leaving said nozzles at an angle relative to the interior of the reactor and form with the surface of said deflector or gas guide body an angle ranging from 40° to 50°.

49. The gas seal according to claim 1, wherein said nozzles or gas outlet openings are configured to impart an initial velocity of 50 to 140 m/sec to the gas stream.

50. The gas seal according to claim 1, wherein the gas stream is a temperature-regulated gas.

51. The gas seal according to claim 49, wherein the temperature-regulated gas is temperature regulated by using a heat content of gases and vapors leaving the reactor.

52. The gas seal according to claim 1, wherein the gas stream is a gas at normal temperature.

53. The gas seal according to claim 1, wherein the gas stream is operated with a gas derived at least in part from the interior of the furnace.

54. A reactor for treating strands or strips of material having a surface, comprising:

an outer jacket extending parallel to a transportation direction of the strands or strips of the material;

two opposing walls, at least one of said walls having an opening for passing the strands or strips of material therethrough;

devices for transporting the strands or strips of material through the reactor;

devices for transporting the strands or strips of material relative to the reactor;

devices for transporting gases relative to a reactor space;

a gas feedline and distribution device disposed at said opening and having gas discharge openings, said gas feedline and distribution device being configured to outflow a gas stream at said gas discharge openings to generate a gas curtain for preventing undesirable substances from crossing said gas curtain relative to said reactor space;

a gas seal including a deflector or gas guide body of said gas feedline and distribution device extending toward an interior of the reactor, disposed behind said gas discharge openings of said gas feedline and distribution device relative to said

interior of the reactor, and disposed at a distance from the respective surfaces of the strands or strips of material.